California Environmental Protection Agency
Department of Pesticide Regulation
National Forest Herbicide Monitoring Report

Environmental Monitoring and Pest Management Branch
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Residues of Forestry Herbicides in Plants of Interest to California Tribes

In recent years, California tribal people have voiced concerns about exposure to forestry herbicides used in national forests. They are concerned because they gather food, medicinal, ceremonial and basketry plant materials in or near these forests. As a result, the U.S. Forest Service asked the California Department of Pesticide Regulation (DPR) to assess the potential exposure of plant gatherers and users to forestry herbicides. We (DPR), in consultation with the local California Indians at Stanislaus, Sierra, and Eldorado National Forests, and the U.S. Forest Service developed monitoring objectives and a plan. The plan consists of two phases. Phase one developed sampling and analytical methods (reported previously). Phase two, which started in January 1997, is designed to: (1) find the length of time pesticides remain in selected plants, and (2) determine how far herbicides move from the treatment areas. This progress report describes phase two activities from July 1998 - June 1999.

Four herbicide and application method combinations have been selected for monitoring: Pronone® 10G (hexazinone) by helicopter; Velpar® L (hexazinone), Accord® (glyphosate), and Garlon® 4 (triclopyr) by backpack sprayer. To determine how long the herbicides last after they are sprayed DPR staff collect samples of four plants: bracken fern roots, buckbrush shoots, golden fleece foliage, and manzanita berries. We collect samples every four to eight weeks until herbicide residue is no longer detected. To test how far herbicides move, we collect samples at four distances ranging from 5 to 100 feet from the edge of the treated area. First, samples were collected within one to three days after the treatment, then four weeks, and then 12 weeks after treatment.

Clarice Ando, a DPR staff, collecting sample of bracken fern roots in winter.

In 1998, the U.S. Forest Service completed all herbicide treatments by August. Stanislaus National Forest used all four applications types. Sierra National Forest used two of the application types (Velpar® L and Accord® by backpack sprayer) and so did Eldorado National Forest (Accord® and Garlon® by backpack sprayer).

Currently, we are targeting 64 treatment sites in three national forests (Eldorado, Stanislaus, and Sierra) to determine how long it takes residues in plants to decrease (dissipation). We have started monitoring at 55 of the 64 sites. Results from all

318 samples taken from 1997 through June 30, 1999 show a general trend of declining residue levels through time (see attached graphs). In some cases, plant material contained residues of some of the herbicides up to 80 weeks after treatment; however, these levels were all less than 0.01 parts per million. We plan additional sampling. We sampled acorns at one site treated with glyphosate; however, we detected no herbicide residues.

We also targeted 24 sites to determine how far herbicides move from where they were applied. We have started monitoring plant material at 20 of the 24 sites. Since the project began through June 30, 1999, we have analyzed 227 samples, 19 of which contained detectable herbicide residues (see attached table). The 19 positive samples were detected in ten of the 20 sites that have been monitored. Of the 19 herbicides that were detected in the ten sites, eight positive samples were detected at 5-15 feet, four were detected at 20-40 feet, five at 50-70 feet, and two at 80-100 feet. Concentrations of herbicides that were detected ranged from 0.1 to 2.68 parts per million.

For more information about this project, please access our Web page at www.cdpr.ca.gov and look under "National Forest Herbicide Monitoring Project."

Off-site monitoring results: the number of samples with detectable amounts of herbicides at various distances from the edge of the treatment areas. We analyzed a total of 227 samples. All positive samples have concentrations that are less than or equal to 2.68 parts per million.

Number of positive samples

Distance (feet):		5-15	20-40	50-70	80-100
Herbicide	**Plant**				
Glyphosate (Accord®)	Buckbrush	1	1	0	0
	Deerbrush	4	1	0	0
Hexazinone (Pronone®)	Bracken fern	0	0	0	0
	Buckbrush	0	0	1	0
	Deerbrush	1	0	1	0
Hexazinone (Velpar® L)	Buckbrush	0	0	1	1
	Deerbrush	0	0	0	0
Triclopyr (Garlon®)	Deerbrush	2	2	2	1

This project is funded by USDA Forest Service Pacific Southwest Region grant No. G-5-98-20-025. For a detailed report or more information, please contact either Madeline Brattesani by phone at (916) 324-4082 or by E-mail at mbrattesani@cdpr.ca.gov; or Kean S. Goh at (916) 324-4072 or kgoh@cdpr.ca.gov. Project Directors are Randy Segawa and Clarice Ando. Madeline Brattesani, Johanna Walters, and Kean Goh prepared this newsletter. The Department of Pesticide Regulation is an equal opportunity service provider. Mention of commercial products does not imply endorsement by the Department of Pesticide Regulation.

Monitoring Results for the Dissipation of Four Herbicides